DINOSAURS!

•DISCOVER THE GIANTS EHISTORIC WORLD•

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CORYTHOSAURUS

***Corythosaurus* had a unique head crest. It looked as if it had half a dinner plate standing up from its head.**

Longer than a bus, *Corythosaurus* browsed among the conifers and shrubs of the Late Cretaceous. Standing on its back legs, it was tall enough to peer through the top windows of a modern two-storey house.

GOOD SENSE

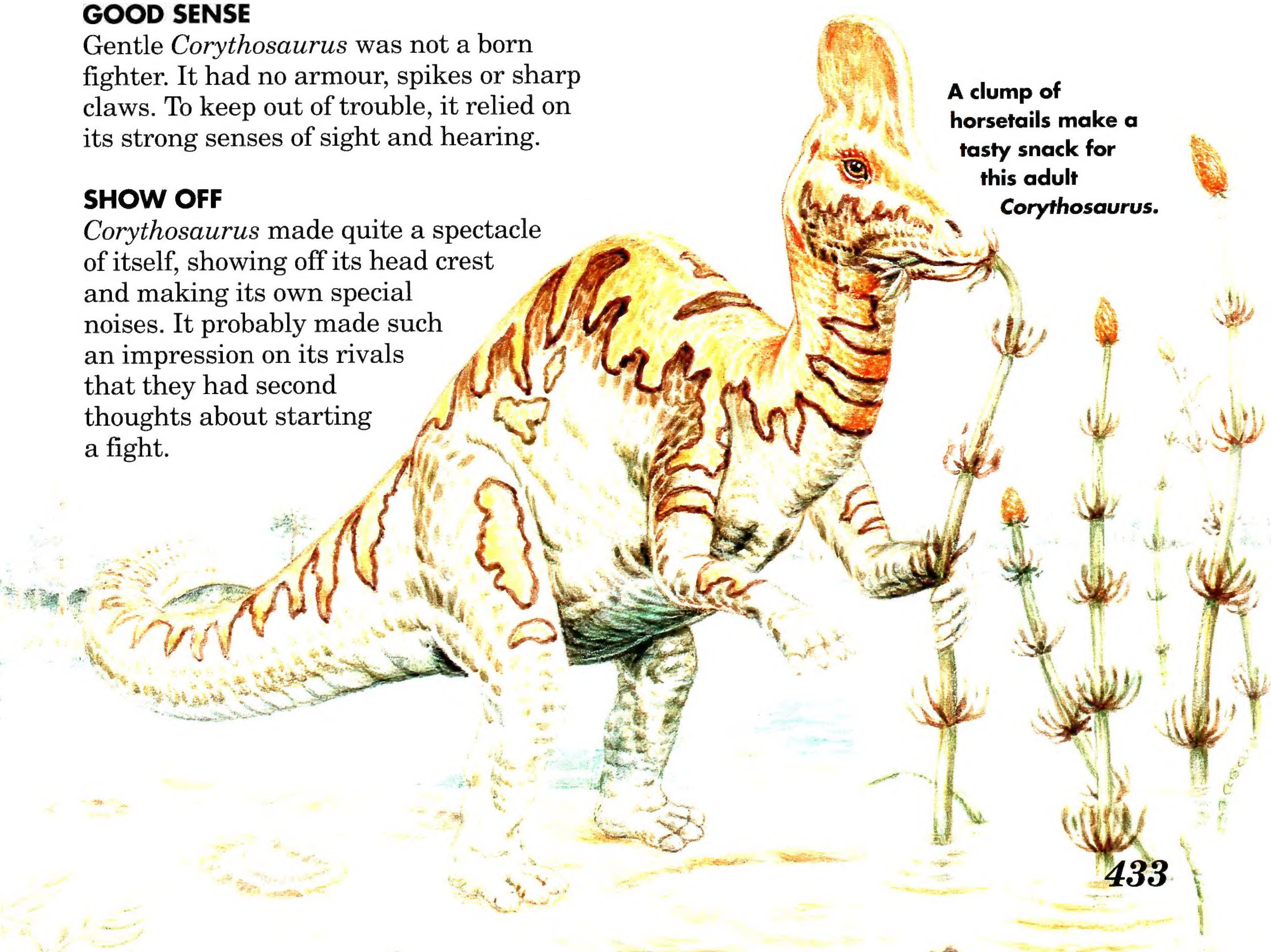
Gentle *Corythosaurus* was not a born fighter. It had no armour, spikes or sharp claws. To keep out of trouble, it relied on its strong senses of sight and hearing.

SHOW OFF

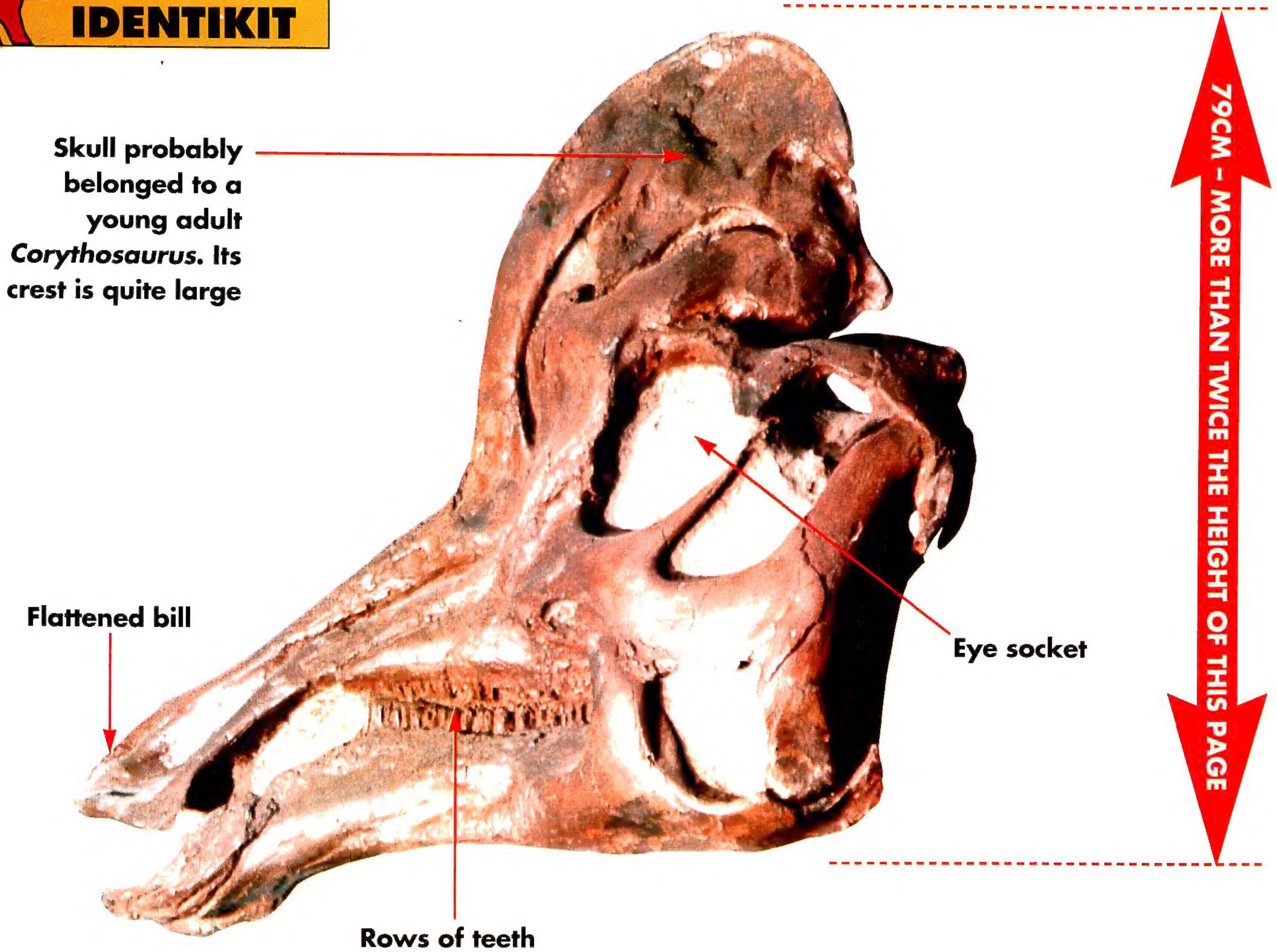
Corythosaurus made quite a spectacle of itself, showing off its head crest and making its own special noises. It probably made such an impression on its rivals that they had second thoughts about starting a fight.

BIG NOISE

Imagine the quiet of a spring evening in the Late Cretaceous. Suddenly, the peace is disturbed by the most amazing bellowing and honking. A chorus of duckbilled dinosaurs is making its call. With their different shaped head crests, this family of dinosaurs made a variety of sounds. It may have sounded like a primitive brass band!



A clump of horsetails make a tasty snack for this adult *Corythosaurus*.


Skull probably belonged to a young adult *Corythosaurus*. Its crest is quite large
Flattened bill
Eye socket
Rows of teeth
79CM – MORE THAN TWICE THE HEIGHT OF THIS PAGE

GREEK HELMET

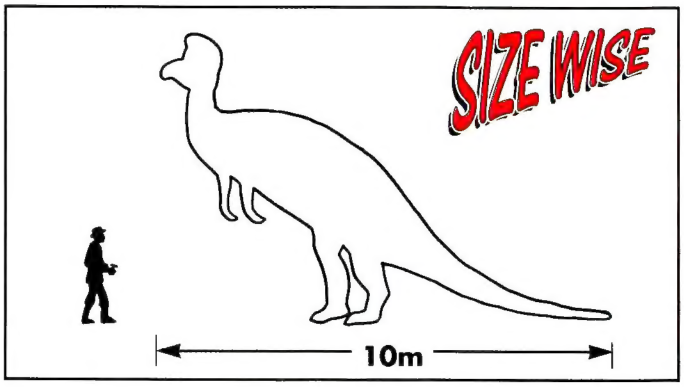
Corythosaurus had a high, narrow crest, shaped a little bit like an ancient Greek soldier's helmet. Breathing tubes ran from the dinosaur's nostrils to the back of its throat and passed through the large crest. Using its great lung power, *Corythosaurus* could bellow by sending gusts of air though the crest. Although duckbills had similar body shapes, their crests were not the same. This meant that they all looked different from one another and made different sounds.

SIZE WISE

The discovery of *Corythosaurus* crests of varying sizes once confused scientists. Now they believe that smaller crests belonged to young or female *Corythosaurus*. A young animal had virtually no crest at all, just a little bump above its eyes.

MONSTER FACTS

- **NAME:** *Corythosaurus* (co-rith-oh-saw-rus) means 'Corinthian (of Corinth, in Greece) helmet reptile'
- **SIZE:** up to 10m long and 7m high
- **FOOD:** plants, twigs, roots and cones
- **LIVED:** about 75 million years ago in the Late Cretaceous Period in Alberta, Canada



SLOW SWIMMER

Although *Corythosaurus* was probably capable of swimming, it did not break any speed records. With its clumsy, heavy body, it did not have the agility to escape a predator on foot. However, it may have plunged into a river or lake and paddled slowly to the other side to outwit a non-swimming dinosaur.

TOUGH DIET

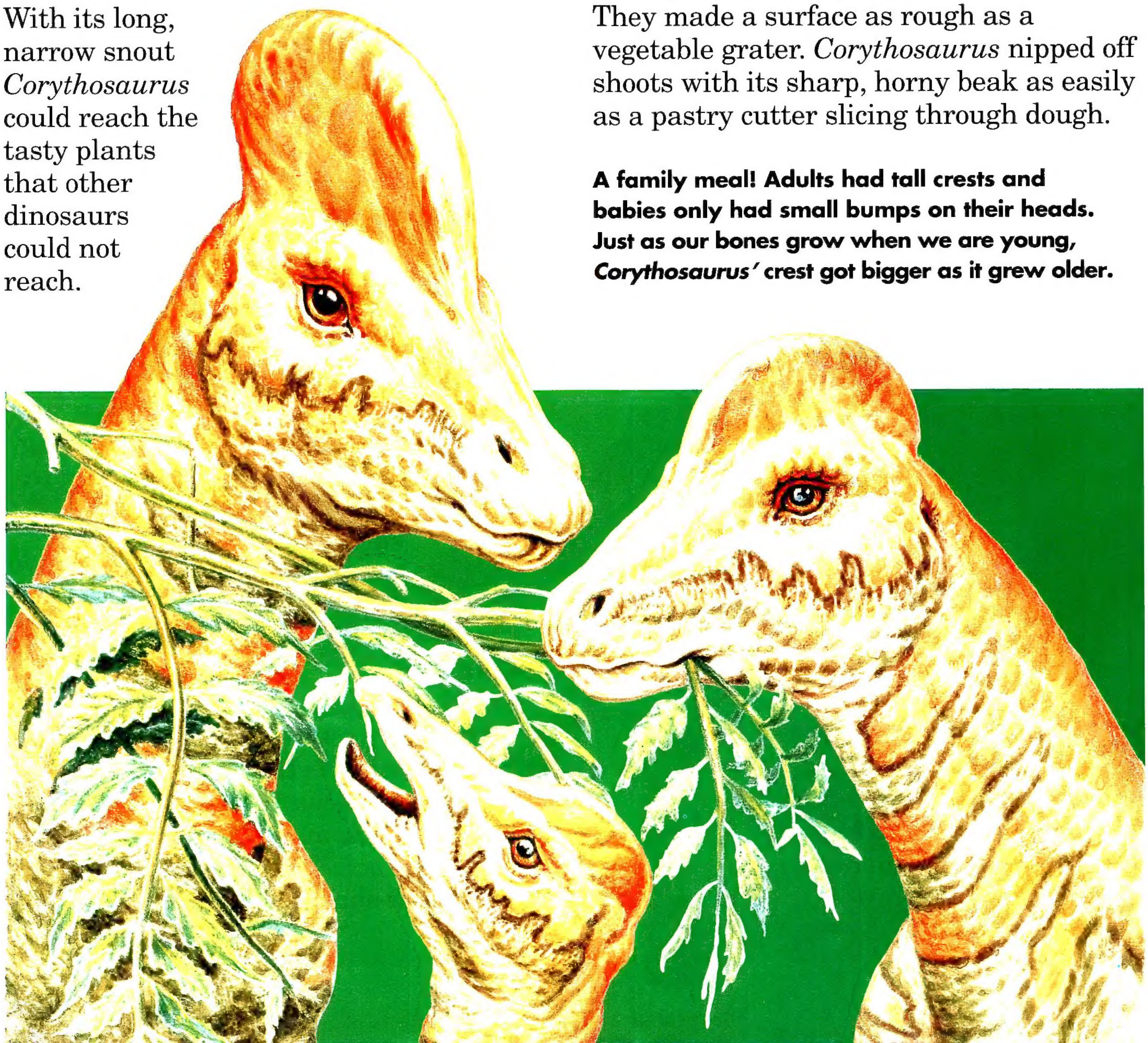
Corythosaurus enjoyed eating twigs and roots, as well as cones of conifers (a type of tree including firs and pines) and seeds. These were tough to eat, but *Corythosaurus* had teeth that could cope with the chewiest food. With its long, narrow snout *Corythosaurus* could reach the tasty plants that other dinosaurs could not reach.

Is it true that plants are harder to digest than meat?

Plant-eating dinosaurs had longer and larger digestive systems than meat-eaters. The reason for this is simple: the tough plants that made up the plant-eaters' diet were harder to chew up and digest than the meat that the meat-eaters devoured. Plant-eaters broke up their food thoroughly so that their bodies could absorb the nutritious parts.

NEW TEETH FOR OLD

When *Corythosaurus* lost a tooth, another one grew to replace it. It had hundreds of teeth packed tightly together in rows. They made a surface as rough as a vegetable grater. *Corythosaurus* nipped off shoots with its sharp, horny beak as easily as a pastry cutter slicing through dough.



A family meal! Adults had tall crests and babies only had small bumps on their heads. Just as our bones grow when we are young, *Corythosaurus'* crest got bigger as it grew older.

ORNITHOLESTES

Ornitholestes seized small, ground-dwelling animals and crushed them with its powerful bite.

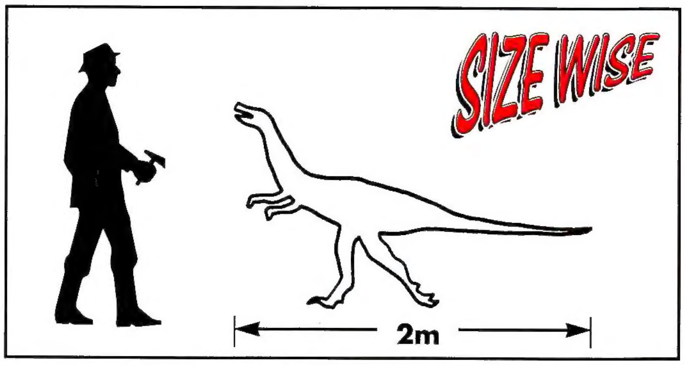
Ornitholestes lived among larger meat-eaters, such as huge *Allosaurus,* and relied on the speed and strength of its long, slender legs to keep it out of danger.

SOLE SKELETON

Only one complete skeleton of *Ornitholestes* has been found so far. It was one of the smaller dinosaurs, about the length of a small pony. As it ran after prey, this dinosaur used its long tail to help it balance.

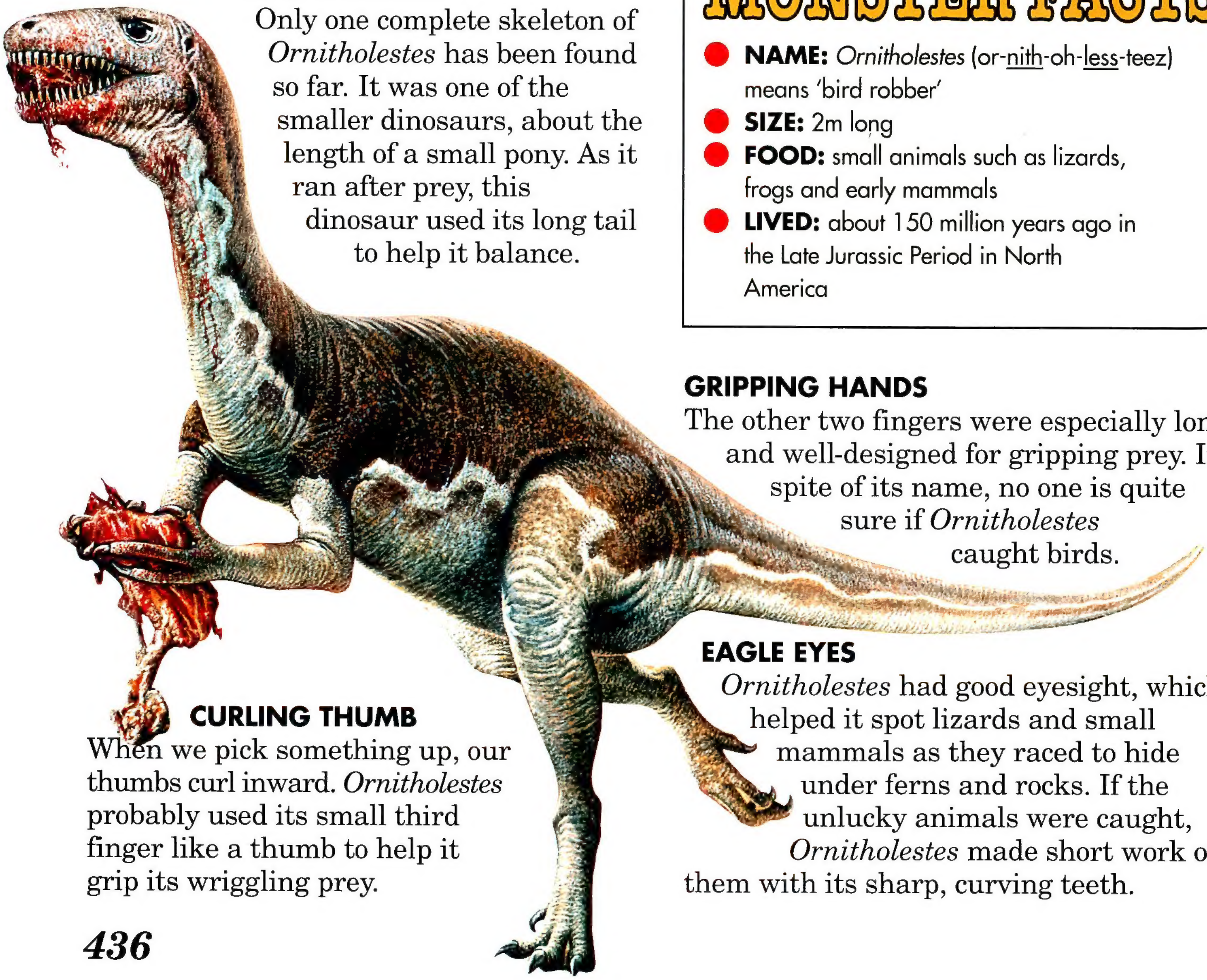
CURLING THUMB

When we pick something up, our thumbs curl inward. *Ornitholestes* probably used its small third finger like a thumb to help it grip its wriggling prey.



MONSTER FACTS

- **NAME:** *Ornitholestes* (or-nith-oh-less-teez) means 'bird robber'
- **SIZE:** 2m long
- **FOOD:** small animals such as lizards, frogs and early mammals
- **LIVED:** about 150 million years ago in the Late Jurassic Period in North America



GRIPPING HANDS

The other two fingers were especially long and well-designed for gripping prey. In spite of its name, no one is quite sure if *Ornitholestes* caught birds.

EAGLE EYES

Ornitholestes had good eyesight, which helped it spot lizards and small mammals as they raced to hide under ferns and rocks. If the unlucky animals were caught, *Ornitholestes* made short work of them with its sharp, curving teeth.

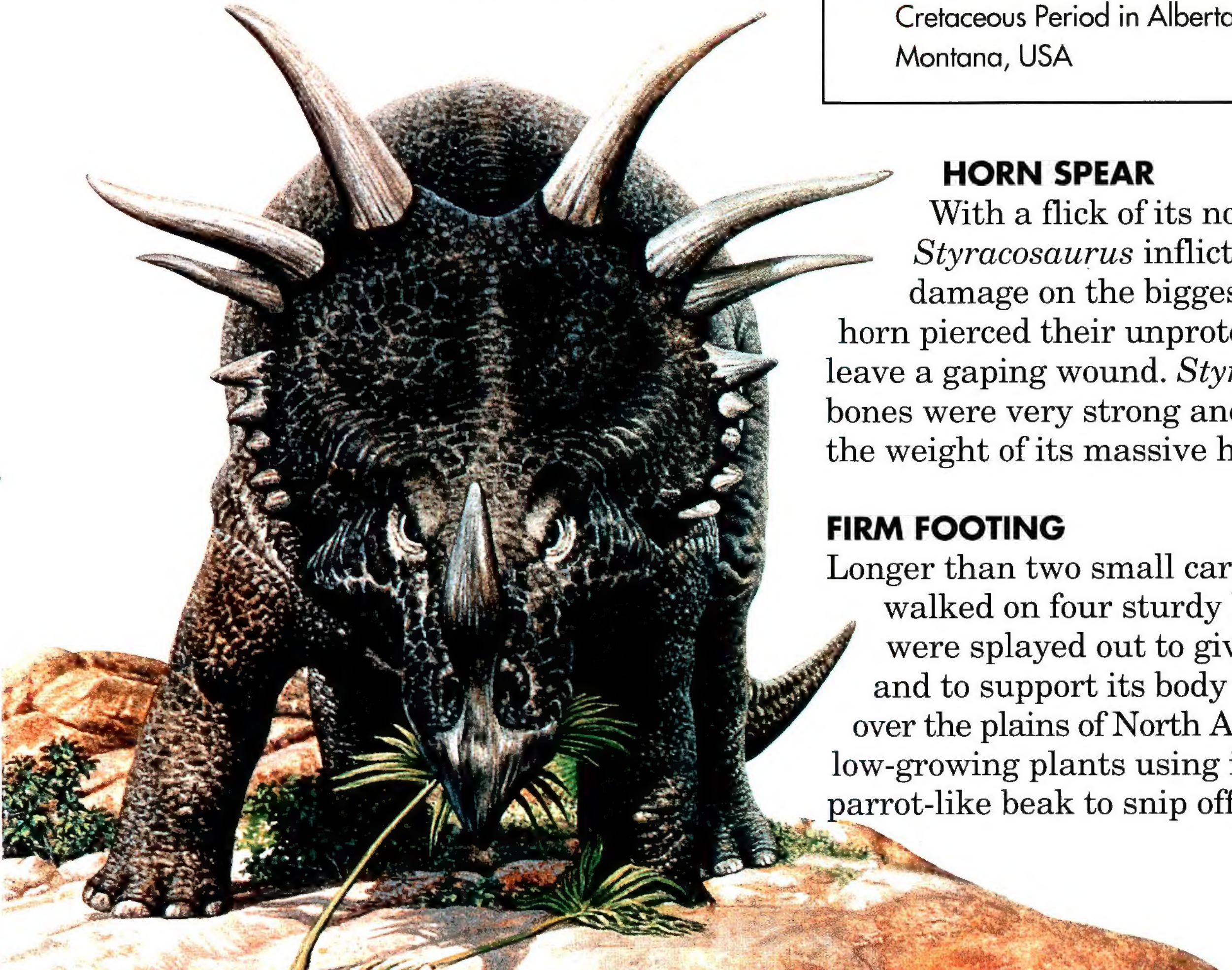
STYRACOSAURUS

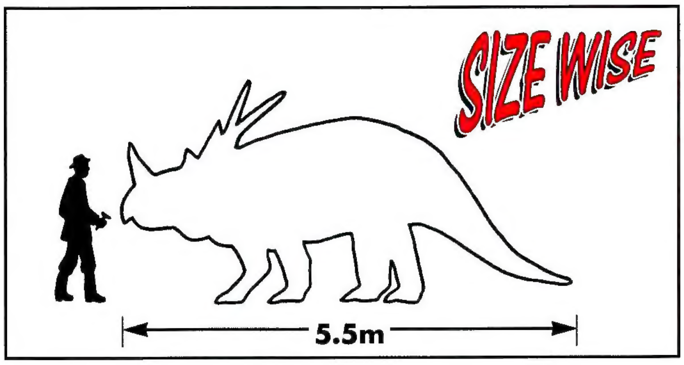
***Styracosaurus* was a magnificent dinosaur. A crown of long spikes stood out from its broad frill.**

Even from a distance, rivals could not mistake *Styracosaurus* for another dinosaur. Like the huge antlers of a red deer stag, its extraordinary spikes attracted mates and frightened enemies. *Styracosaurus* did not have to risk a fight. A mere wave of the head did the trick!

DEADLY WEAPON

The spikes were too weak to be useful for fighting, but *Styracosaurus* had another fearsome weapon – a huge nose horn.





MONSTER FACTS

- **NAME:** *Styracosaurus* (sty-rak-oh-saw-rus) means 'spiked reptile'
- **SIZE:** 5.5m long and about 2.5m high
- **FOOD:** low-growing plants
- **LIVED:** about 80 million years ago in the Late Cretaceous Period in Alberta, Canada, and Montana, USA

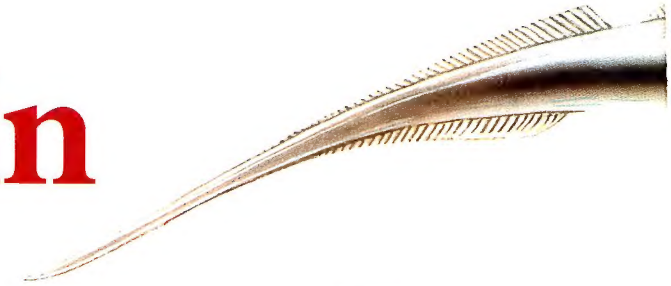
HORN SPEAR

With a flick of its nose, *Styracosaurus* inflicted deadly damage on the biggest predators. Its horn pierced their unprotected flesh to leave a gaping wound. *Styracosaurus*' neck bones were very strong and helped it carry the weight of its massive head.

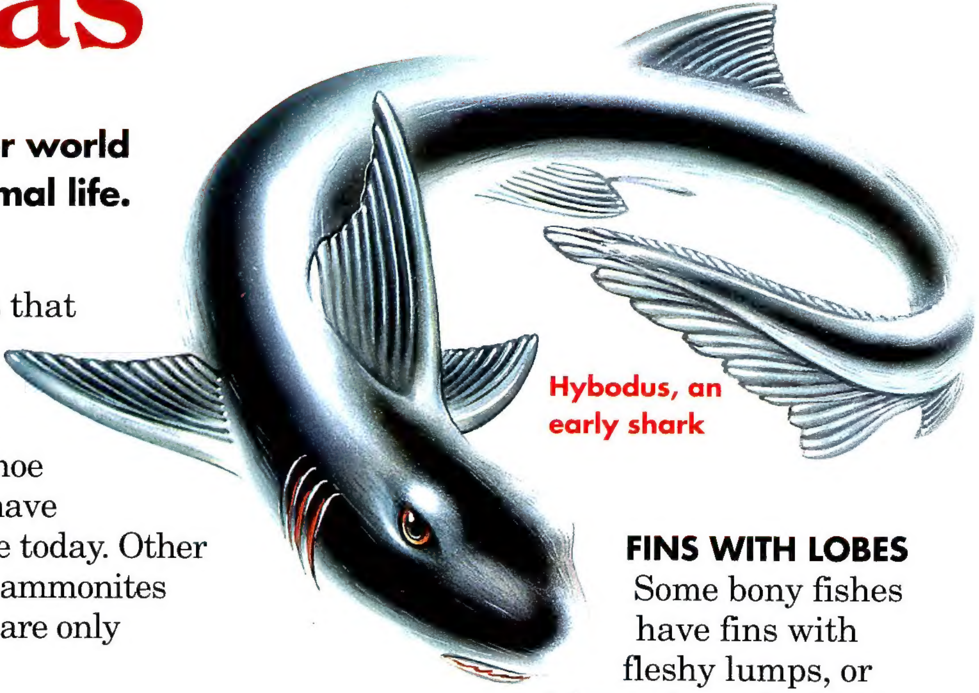
FIRM FOOTING

Longer than two small cars, *Styracosaurus* walked on four sturdy legs. Its toes were splayed out to give it firm footing and to support its body weight. Roaming over the plains of North America, it fed on low-growing plants using its curved, parrot-like beak to snip off shoots.

Swarming in the seas



The prehistoric underwater world was jam-packed with animal life.

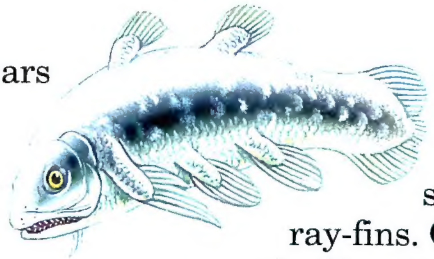


Hybodus, an early shark

Many of the creatures that swam beneath the prehistoric waves look familiar. Some of them, such as sharks, horseshoe crabs, shellfish and jellyfish, have descendants that are still alive today. Other animals, like the curly-shelled ammonites and the squid-like belemnites, are only known from their fossils.

SOME FISH NEVER CHANGE

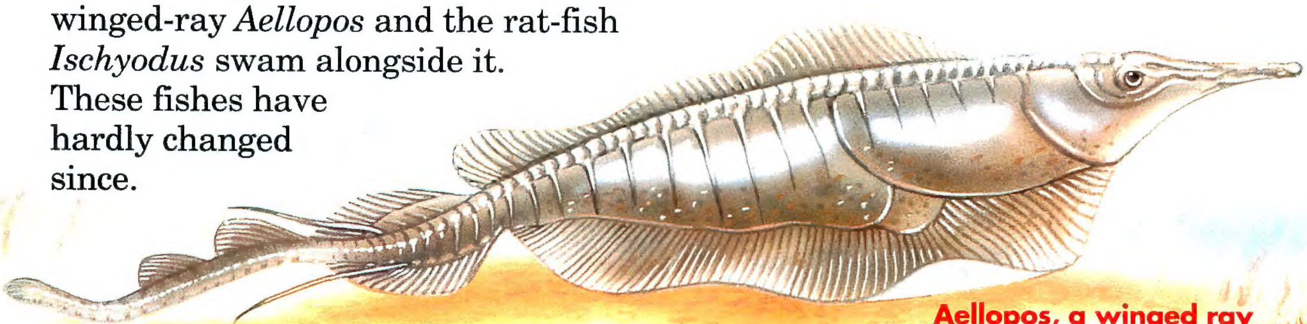
Fishes appeared 400 million years ago, long before the dinosaurs. There were two main kinds: those with gristle (cartilage) skeletons and those with bony skeletons. Sharks and rays have gristle skeletons. At the beginning of the Dinosaur Age, sharks such as 2m-long *Hybodus*, a hunter, were already masters of the seas. The winged-ray *Aellopos* and the rat-fish *Ischyodus* swam alongside it. These fishes have hardly changed since.



Macropoma

FINS WITH LOBES

Some bony fishes have fins with fleshy lumps, or lobes, where they join the body. They are lobe-fins. They evolved before the main fish group, the ray-fins. They were never as successful in the water as the ray-fins. One lobe-fin was *Macropoma*, only 60cm long, but with a deep body. It belonged to the same group as today's 'living fossil', the coelacanth, and it lived near the end of the Dinosaur Age.



Aellopos, a winged ray

Sea-lilies

Ischyodus, a rat-fish

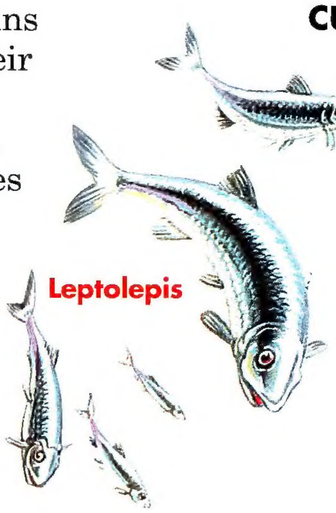
FINS WITH RAYS

Ray-fins exist today. They have stiff spines, or rays, that can open the fin like a fan. The ray-fins are an ancient group, but they only began to flourish at the same time as the dinosaurs. They had thick, heavy scales and a top-heavy tail. *Lepidotes* looked like a modern cod and lived during the Jurassic Period in seas all over the world.

Lepidotes

ESCAPE FROM DEATH

As time went on, the ray-fins improved their design. Their scales became lighter and their tails better balanced. All sorts of shapes and sizes appeared. *Leptolepis* was about 20cm long and looked like a herring. Compared with earlier fishes, it was swift and agile, and able to stay out of the jaws of the great hunting reptiles. The seas have teemed with ray-fins ever since, from mackerel to marlin, bass to barracuda.

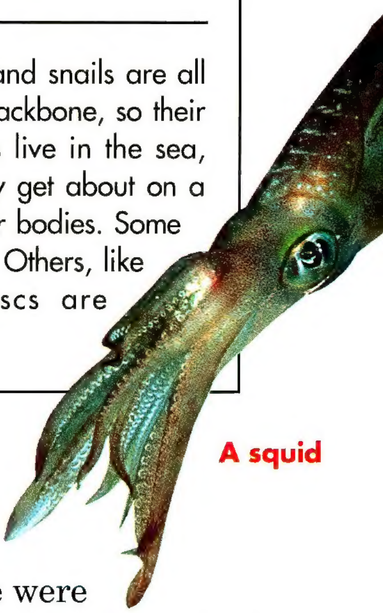


Leptolepis

Gonioteuthis, a belemnite

What is? A MOLLUSC

Shellfish, squids, octopuses and snails are all molluscs. None of them has a backbone, so their bodies are soft. Some molluscs live in the sea, others in rivers or on land. They get about on a muscular 'foot' that is under their bodies. Some molluscs, like snails, have shells. Others, like slugs, do not. Most molluscs are herbivorous, but some eat meat.



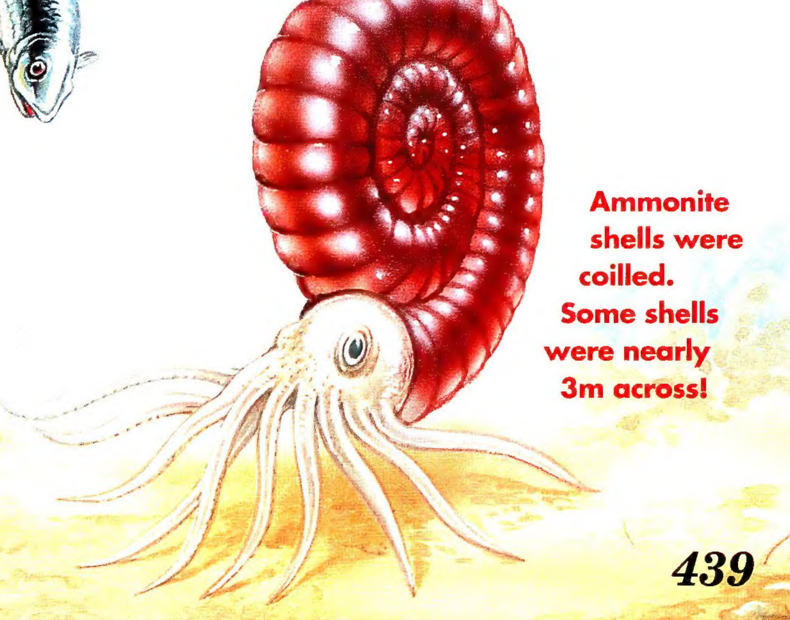
A squid

ALL ARMS

Octopuses and squids are modern molluscs. Their cousins in the Dinosaur Age were ammonites and belemnites, which left many fossils behind. *Gonioteuthis* was a belemnite. It was a squid-like creature with a long, bullet-shaped shell inside its body. Although they were little, these sea creatures were fierce hunters.

CURLY-WURLY SHELLS

Stephanoceras was one of many thousands of kinds of ammonites. Although they lasted for millions of years, the belemnites and ammonites died out with the dinosaurs.



Ammonite shells were coilled. Some shells were nearly 3m across!

STINGERS AND BUILDERS

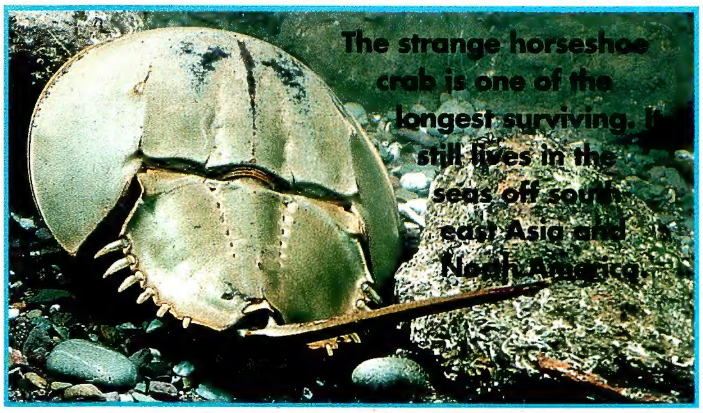
Fossils of soft-bodied jellyfish and sea anemones are rare. They tell us that these floppy animals were poisoning prey with their stinging tentacles long before life had began on land. Closely related are corals, tiny animals that make their own stony cups to sit in.

CRABS AND COUSINS

On the prehistoric sea bed, crabs and their crawling cousins looked much the same as today. Crabs like *Eryon* and shrimps such as *Aeger* crept over and cleaned the coral, picking up bits of left-over food. The horseshoe crab is a weird beast that is not a true crab, but a closer cousin of spiders and scorpions. It appeared long before the dinosaurs and is still around today.

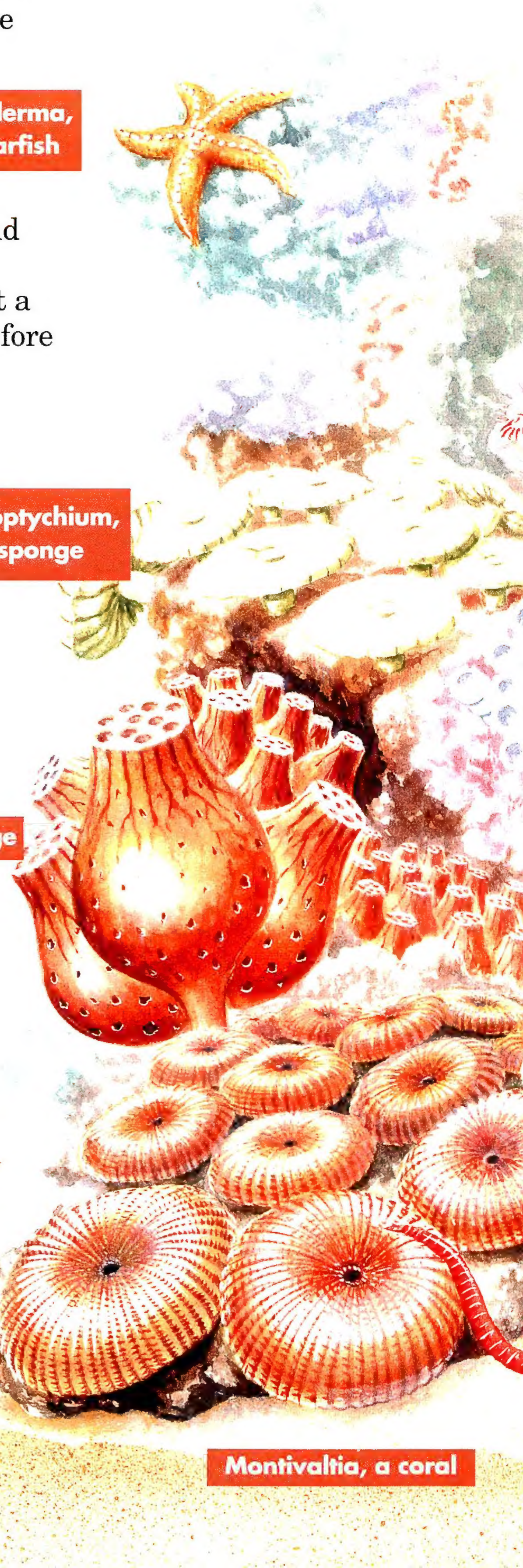
STATELY STARFISH

Starfish and their relatives, sea-urchins and sea-lilies, have survived for more than 400 million years. The chalky plates in their skin make good fossils. A dinosaur wading through shallow water may have seen the starfish *Calliderma* hunting mussels, the brittle star *Geocoma* and the sea-urchin *Acrosalenia,* with its soft body protected by long, pencil-like spines.



The strange horseshoe crab is one of the longest surviving. I still lives in the seas off south-east Asia and North America.

A CORAL REEF IN THE AGE OF THE DINOSAURS



LIVING FOSSILS

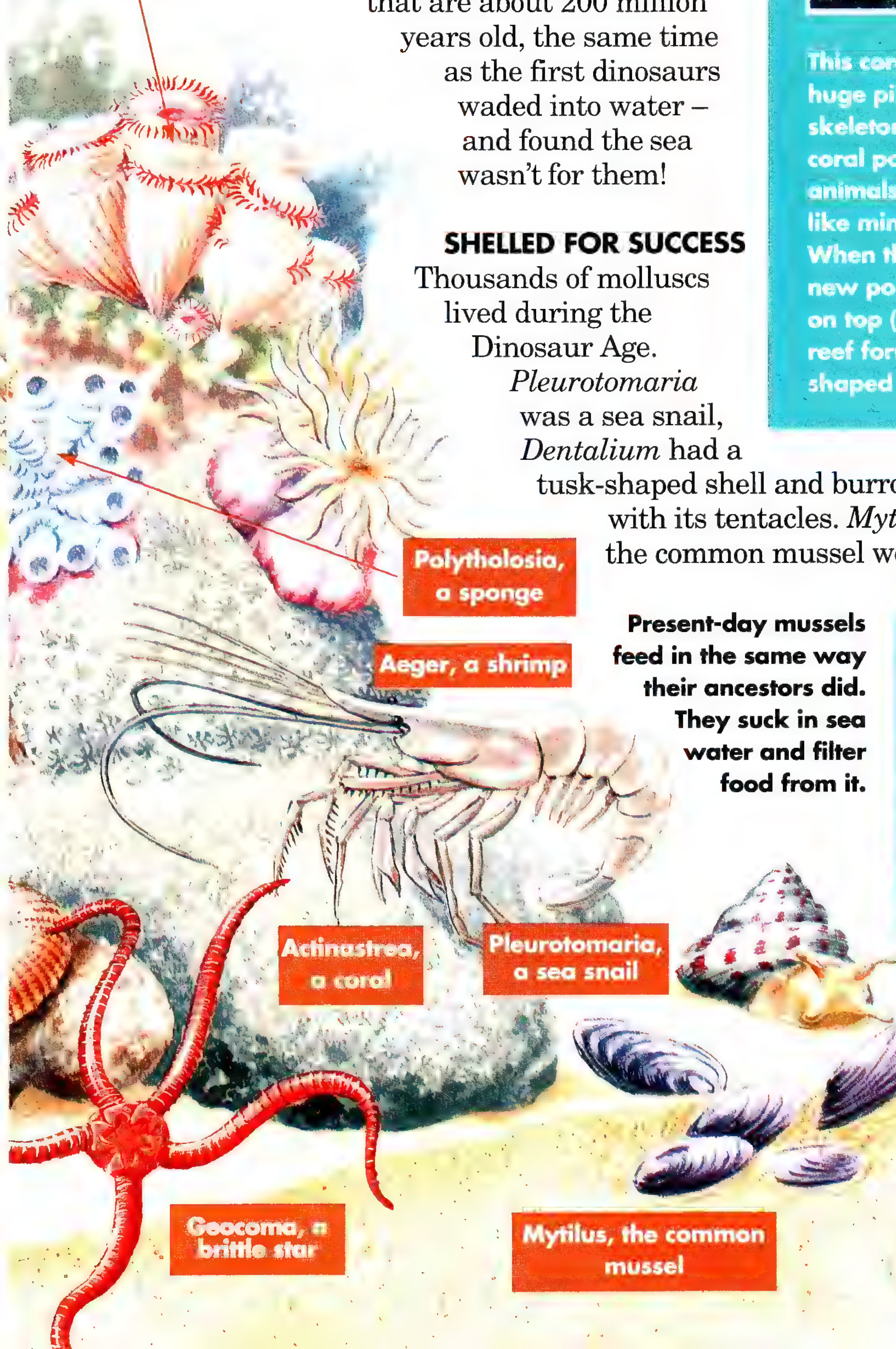
Lampshells (also called brachiopods) are some of the best examples of 'living fossils' – animals that have barely changed over millions of years. Outside, lampshells look like molluscs, but they evolved separately from molluscs. *Lingula* is a lampshell, which is known from fossils that are about 200 million years old, the same time as the first dinosaurs waded into water – and found the sea wasn't for them!

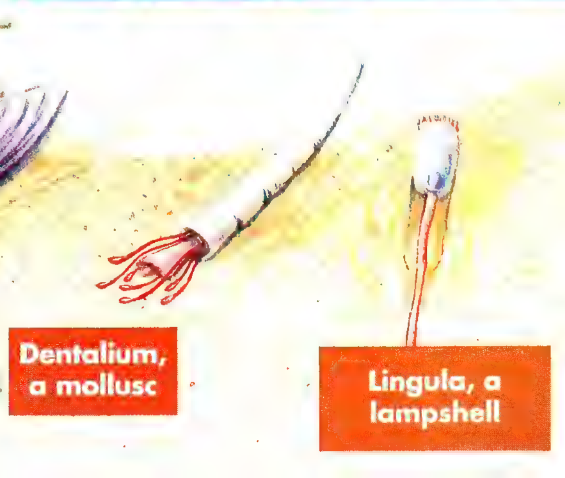
SHELLED FOR SUCCESS

Thousands of molluscs lived during the Dinosaur Age. *Pleurotomaria* was a sea snail, *Dentalium* had a tusk-shaped shell and burrowed in mud, picking up food with its tentacles. *Mytilus* is a great survivor. It is the common mussel we know so well today.

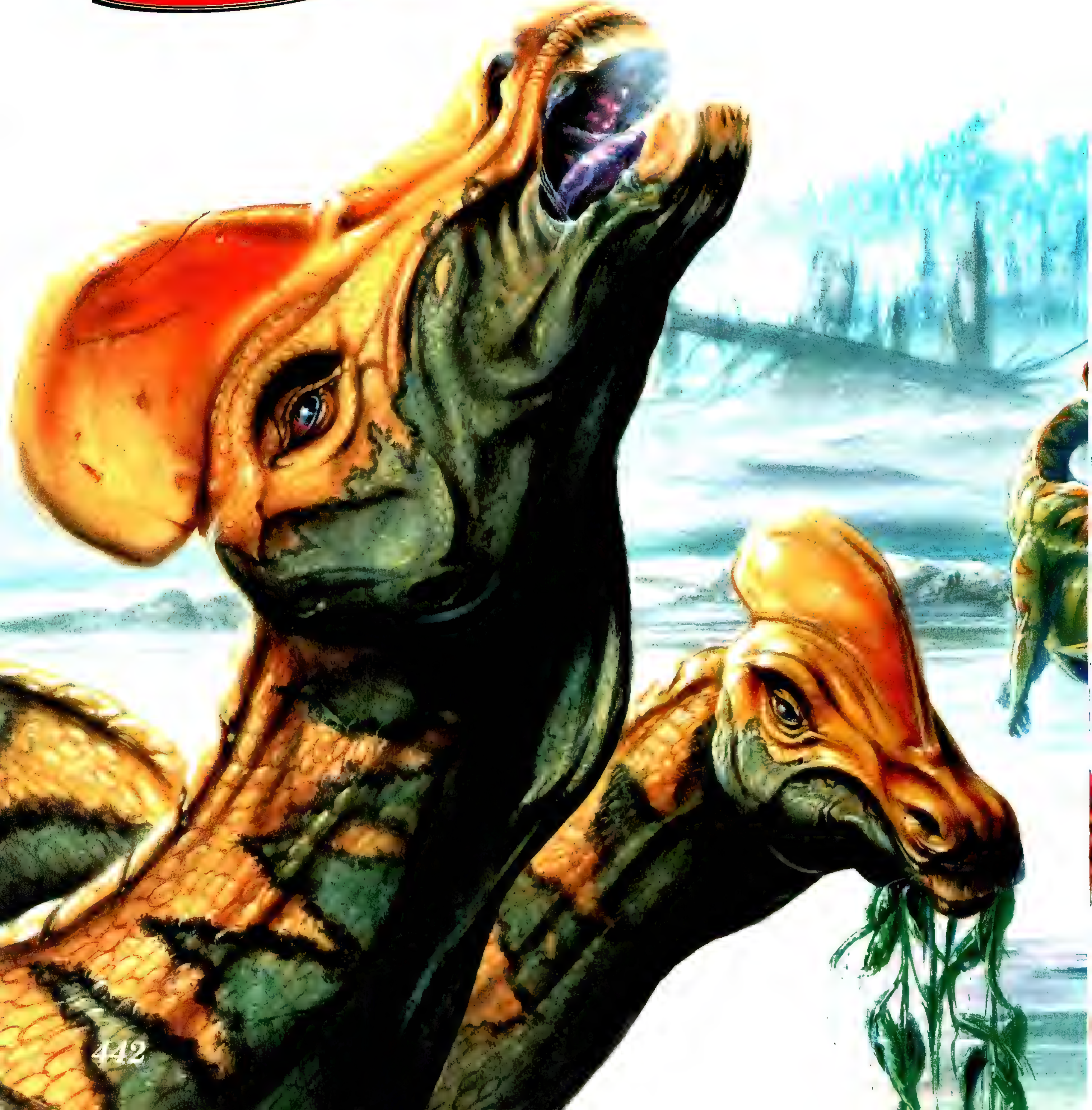
This coral reef is a huge pile of skeletons left by coral polyps, animals which look like minute jellyfish. When they die, new polyps grow on top (right). Thousands of years later, a reef forms and then an island. Corals have shaped the land since the Dinosaur Age.

Present-day mussels feed in the same way their ancestors did. They suck in sea water and filter food from it.



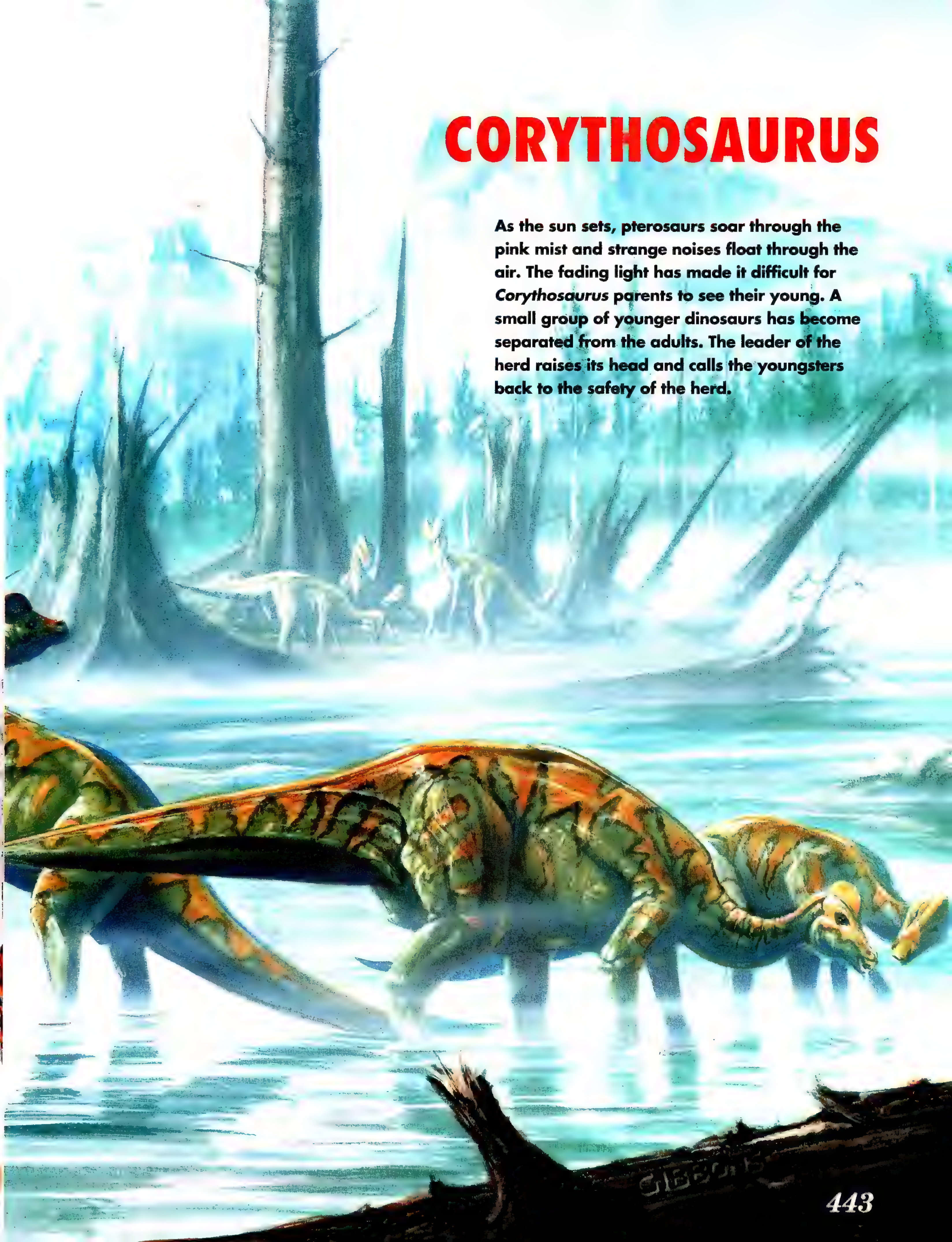


GIANTS OF THE PAST



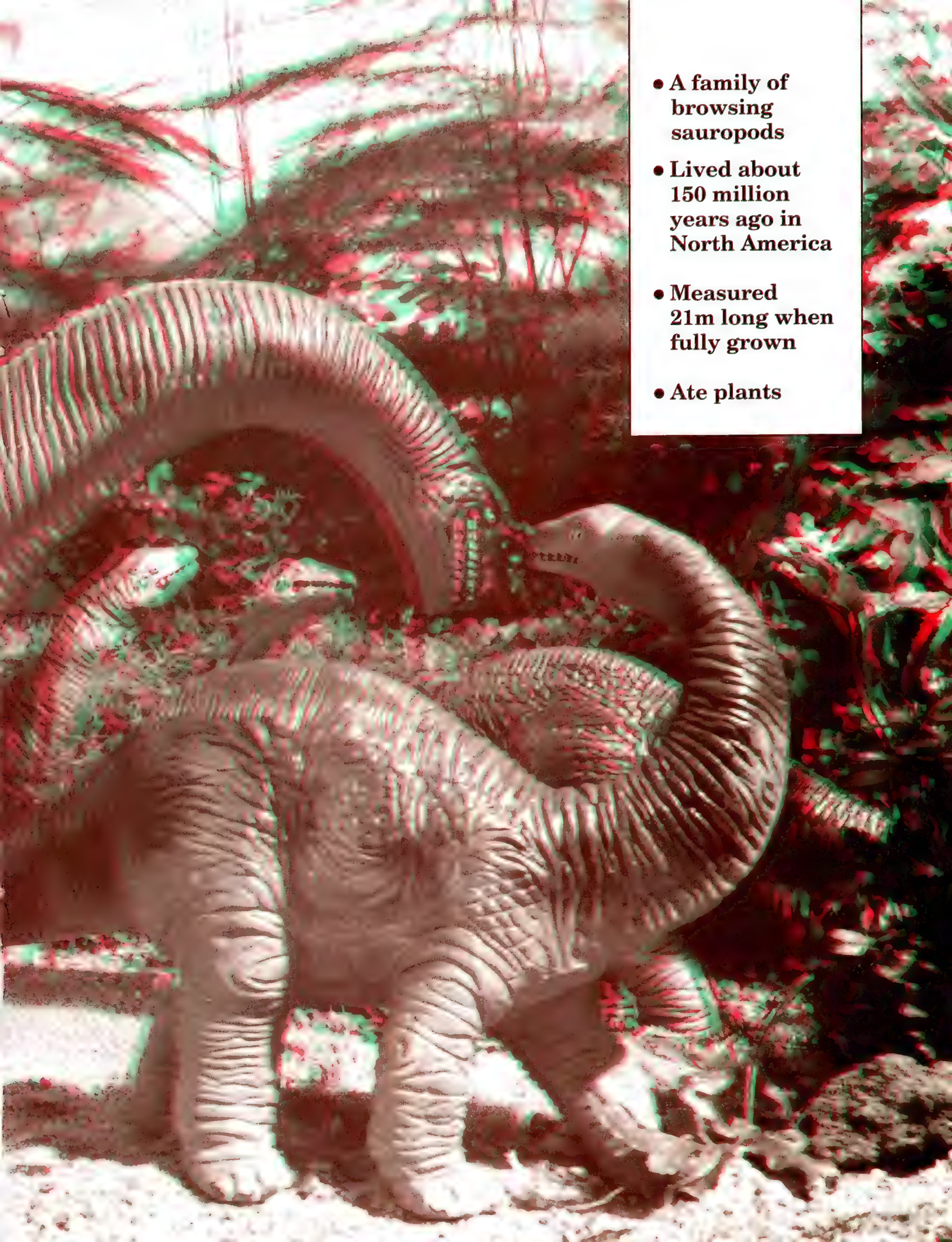
CORYTHOSAURUS

As the sun sets, pterosaurs soar through the pink mist and strange noises float through the air. The fading light has made it difficult for *Corythosaurus* parents to see their young. A small group of younger dinosaurs has become separated from the adults. The leader of the herd raises its head and calls the youngsters back to the safety of the herd.



3-D Gallery 28

APATOSAURUS FAMILY



- A family of browsing sauropods
- Lived about 150 million years ago in North America
- Measured 21m long when fully grown
- Ate plants

The largest and smallest

The largest and smallest dinosaurs that ever walked the Earth are featured on these pages.

Dinosaurs were not the mightiest animals that ever lived. Today there is a monster that is bigger than any known dinosaur – the blue whale (the longest is 33.5m long). You would have to line up 56 of the smallest dinosaurs head-to-tail, just to span the length of this huge sea monster.

BUILT LIKE A HOUSE

Some dinosaurs were as tall as a house, others were the height of a chicken. When we think about dinosaurs, the big record breakers come to mind, but many dinosaurs were quite small.

FRAGILE – HANDLE WITH CARE!

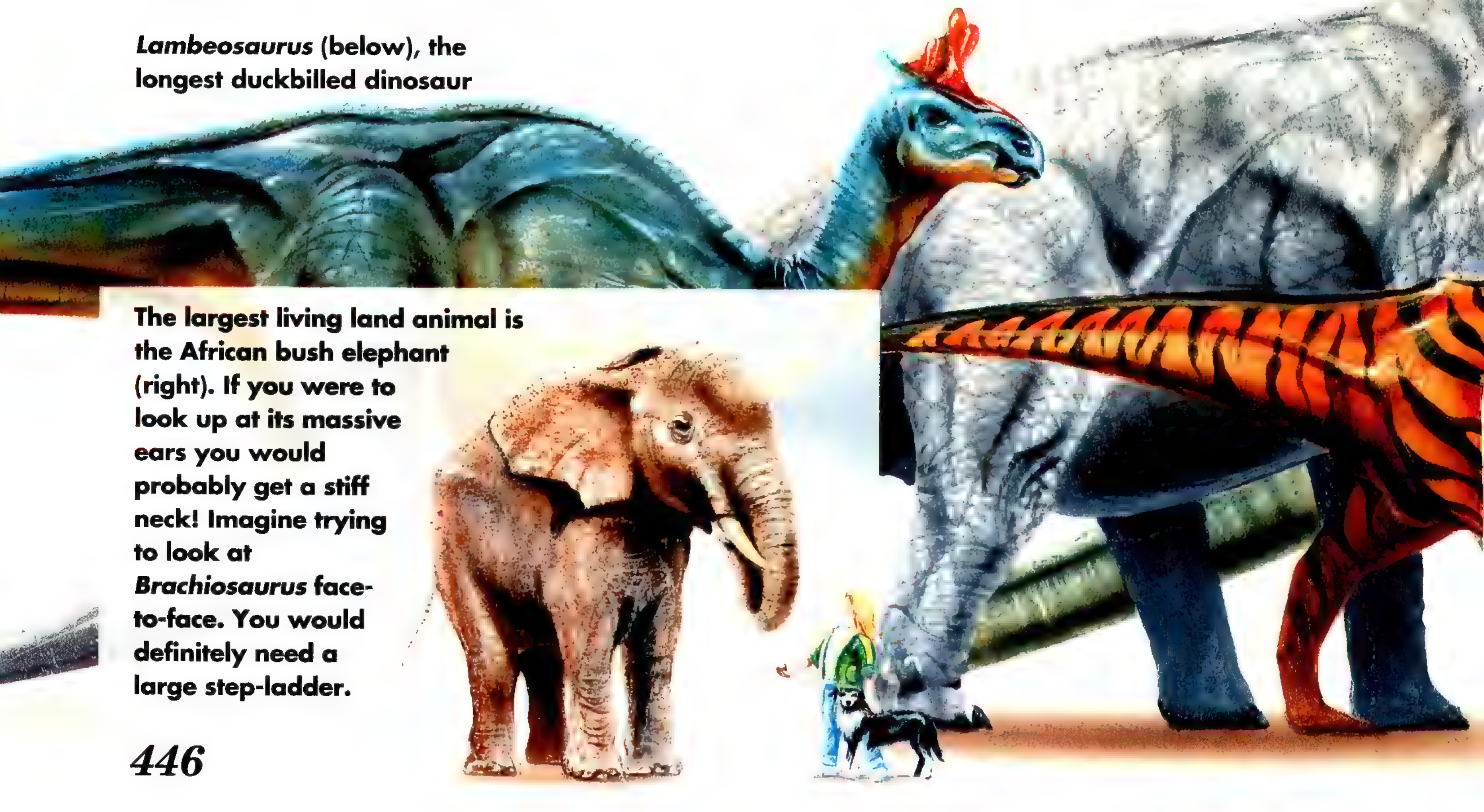
Fossils of tiny dinosaurs are rare finds. Small, fragile bones are either overlooked or they get broken before they are found.

SMALL IS SUPER

Being small was good news for some dinosaurs. *Saltopus* (60cm long) and *Lesothosaurus* (90cm long) were light enough to run after lively lizards and buzzing insects. They could also run away and hide from larger predators.

BIG IS BEST

There were advantages to being large. A predator would look twice at a big plant-eater before it attacked. Size was not only off-putting, it also let huge sauropods reach the juiciest leaves in the trees.



Lambeosaurus **(below), the longest duckbilled dinosaur**

The largest living land animal is the African bush elephant (right). If you were to look up at its massive ears you would probably get a stiff neck! Imagine trying to look at *Brachiosaurus* face-to-face. You would definitely need a large step-ladder.

THE LONGEST

Dinosaur: Although we do not yet have complete skeletons, *'Supersaurus'* and *'Ultrasaurus'* probably measured 25 – 30m long. *Seismosaurus* measured an earth-shaking 30m.

Hadrosaur: *Lambeosaurus* (15m long).

Armoured dinosaur: *Ankylosaurus* (11m).

Meat-eater: *Spinosaurus* (15m).

Horned dinosaur: *Triceratops* (9m).

Arms: *Deinocheirus* had 2.6m long arms. Its body has not been found yet, but it could have measured 7.8m long.

Neck: *Mamenchisaurus'* neck was 11m long.

Tail: *Diplodocus'* tail was 15.4m long.

Trackway: In 1983, a trail of *Apatosaurus* footprints was found. It was 215m long.

THE HEAVIEST

Dinosaur: *Seismosaurus* may have weighed 51 tonnes – heavier than nine African elephants.

Meat-eater: *T rex* weighed about 5.7 tonnes, that's heavier than two Rolls Royces!

THE LARGEST

Dinosaur: *Seismosaurus* was 30m long and weighed 80 tonnes. Although *Ultrasaurus* weighed more (100 – 130 tonnes), it was slightly shorter.

Complete dinosaur: The biggest complete dinosaur skeleton in a museum is *Brachiosaurus*.

Footprints: The biggest footprints found so far were made by a duckbilled dinosaur. Each footprint measured 1.36m long and was 81cm wide. The biggest sauropod footprint so far is 1m wide.

Claws: *Therizinosaurus* had massive, sickle-shaped claws – they were 80cm long.

Skull: *Torosaurus'* skull was huge and measured 3m long. This included its enormous frill.

Eyes: *Dromiceiomimus* had the biggest eyes – and brilliant eyesight to match!

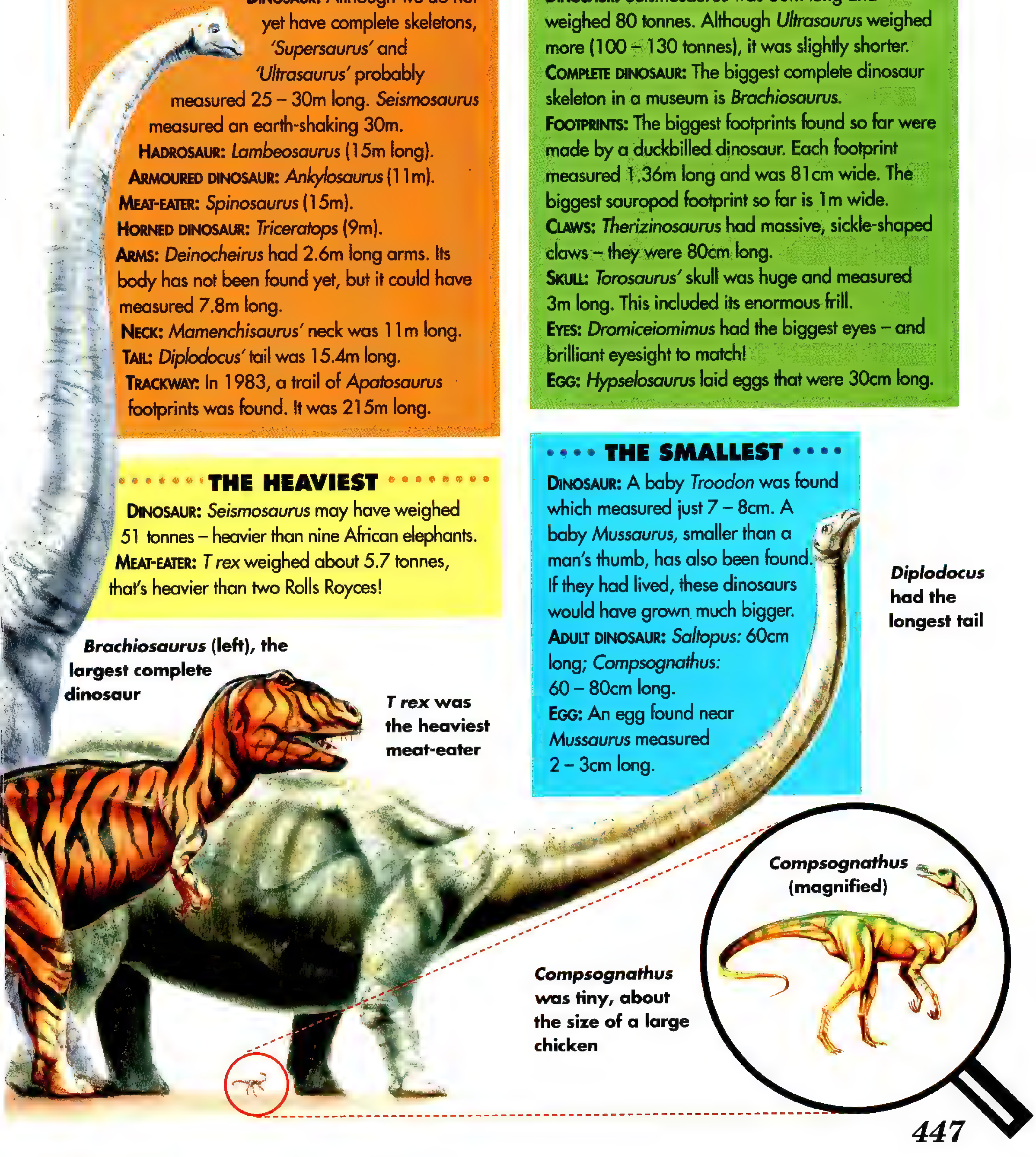
Egg: *Hypselosaurus* laid eggs that were 30cm long.

THE SMALLEST

Dinosaur: A baby *Troodon* was found which measured just 7 – 8cm. A baby *Mussaurus*, smaller than a man's thumb, has also been found. If they had lived, these dinosaurs would have grown much bigger.

Adult dinosaur: *Saltopus:* 60cm long; *Compsognathus:* 60 – 80cm long.

Egg: An egg found near *Mussaurus* measured 2 – 3cm long.



Brachiosaurus **(left), the largest complete dinosaur**

T rex **was the heaviest meat-eater**

Diplodocus **had the longest tail**

Compsognathus **(magnified)**

Compsognathus **was tiny, about the size of a large chicken**

Huge herds

Fossil clues show that some dinosaurs probably lived in herds. Experts now think some of those herds might have contained hundreds, or even thousands, of dinosaurs.

One important clue that dinosaur herds may have been big are trackways with many footprints all going in the same direction. Another good clue was the discovery of huge numbers of bones belonging to the same sort of dinosaur buried together. One of the largest burial grounds, or 'bone beds', contained 10,000 duckbilled *Maiasaura*!

BABY BOOM

Many nests made by *Maiasaura* have also been found in one place. Experts think they were part of a mass nesting site. So large herds of *Maiasaura* probably returned to the same nests to lay their eggs, again and again. They did this to help protect their babies. Many dinosaurs nesting together might have stopped predators from stealing the eggs.

SAFETY IN NUMBERS

Dinosaurs probably herded together for safety, just as many animals do today. Like modern herds, dinosaur herds probably had an order in which every animal, from the leader down to the youngest dinosaur, knew its place in the herd. The weaker members, like the young or the sick, were protected by the strongest.

LEADER OF THE PACK

In modern herds, adult males fight to find out which is the strongest. The winner leads the herd and mates with the females. This helps the herd to have strong babies. Dinosaurs probably behaved in the same way.

POUNDING THE PLAINS

Maiasaura and *Chasmosaurus* are just two types of plant-eating dinosaur that herded together to protect themselves from fierce meat-eating dinosaurs. Modern grass-eaters, like wildebeest and gazelles, do the same.

HUNTING IN HERDS

Not only plant-eating dinosaurs formed herds. Some of the smaller meat-eaters did, too. Trackways show that *Coelophysis* travelled about in large, fast-moving herds. They hunted on land and might have even fished in shallow water, like modern water birds.

A gazelle herd (above) gallops across the African plains. Dinosaurs lived in herds, too. A herd of nervous zebra (below) scatter when a lion stalks them for lunch. Some meat-eating dinosaurs stalked plant-eaters like this.

DINOSAUR 'LIONS'

Big meat-eating dinosaurs like *Albertosaurus* were probably the 'lions' of the dinosaur world. They would have formed small packs rather than huge herds. Packs of *Albertosaurus* might have stalked large herds of plant-eating dinosaurs. They waited to pounce in much the same way that lions do when they stalk game on the African plains today.

Two hungry *Albertosaurus* stalk their prey. Has the herd of *Chasmosaurus*, quietly feeding in the morning sunlight, spotted the danger that lurks near them? Turn the page to find out.

BODY GUARDS

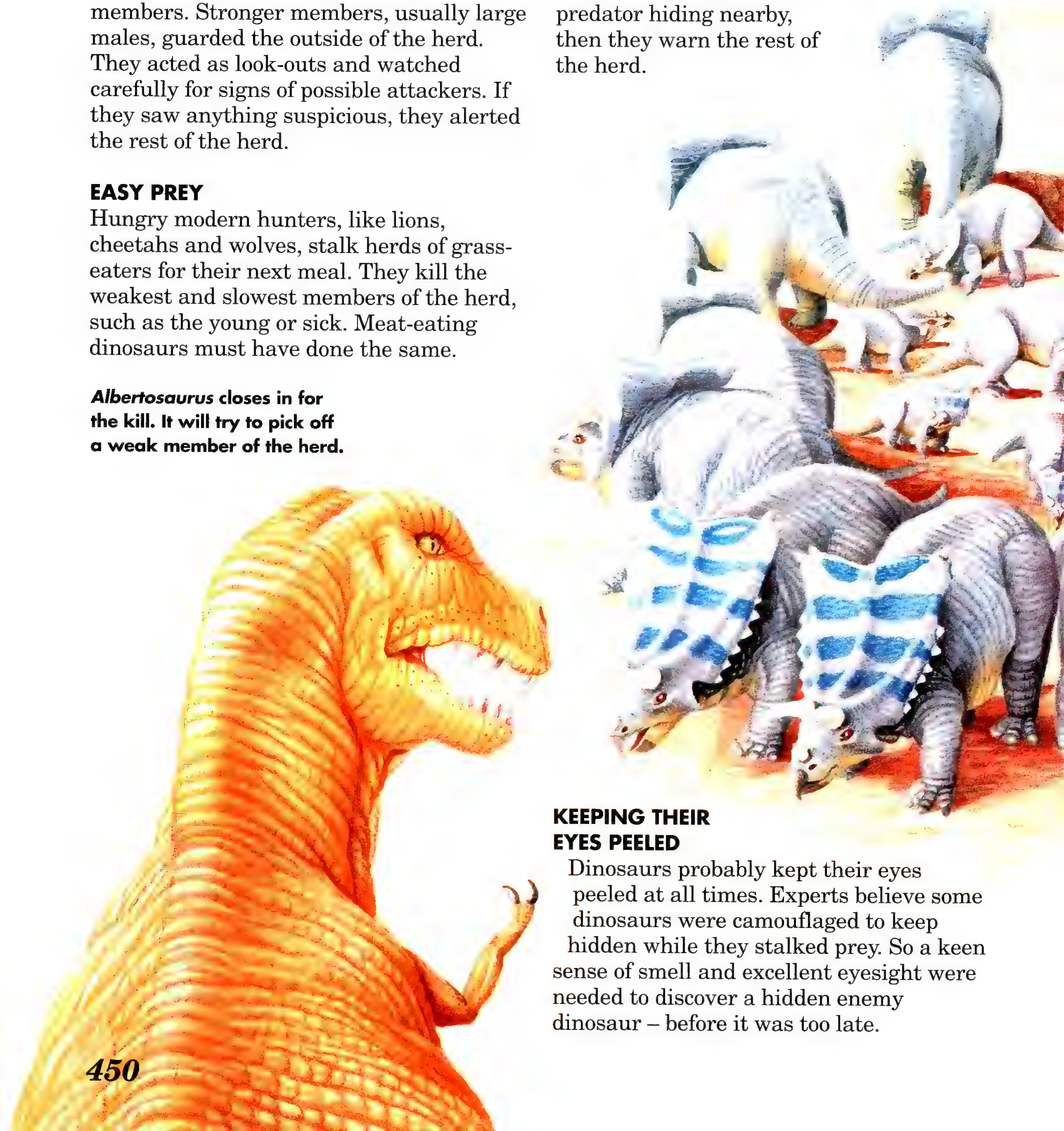
When danger threatened plant-eating dinosaurs, they probably behaved like any modern grass-eating herd under attack. They banded together to protect weaker members. Stronger members, usually large males, guarded the outside of the herd. They acted as look-outs and watched carefully for signs of possible attackers. If they saw anything suspicious, they alerted the rest of the herd.

EASY PREY

Hungry modern hunters, like lions, cheetahs and wolves, stalk herds of grass-eaters for their next meal. They kill the weakest and slowest members of the herd, such as the young or sick. Meat-eating dinosaurs must have done the same.

NOSE FOR TROUBLE

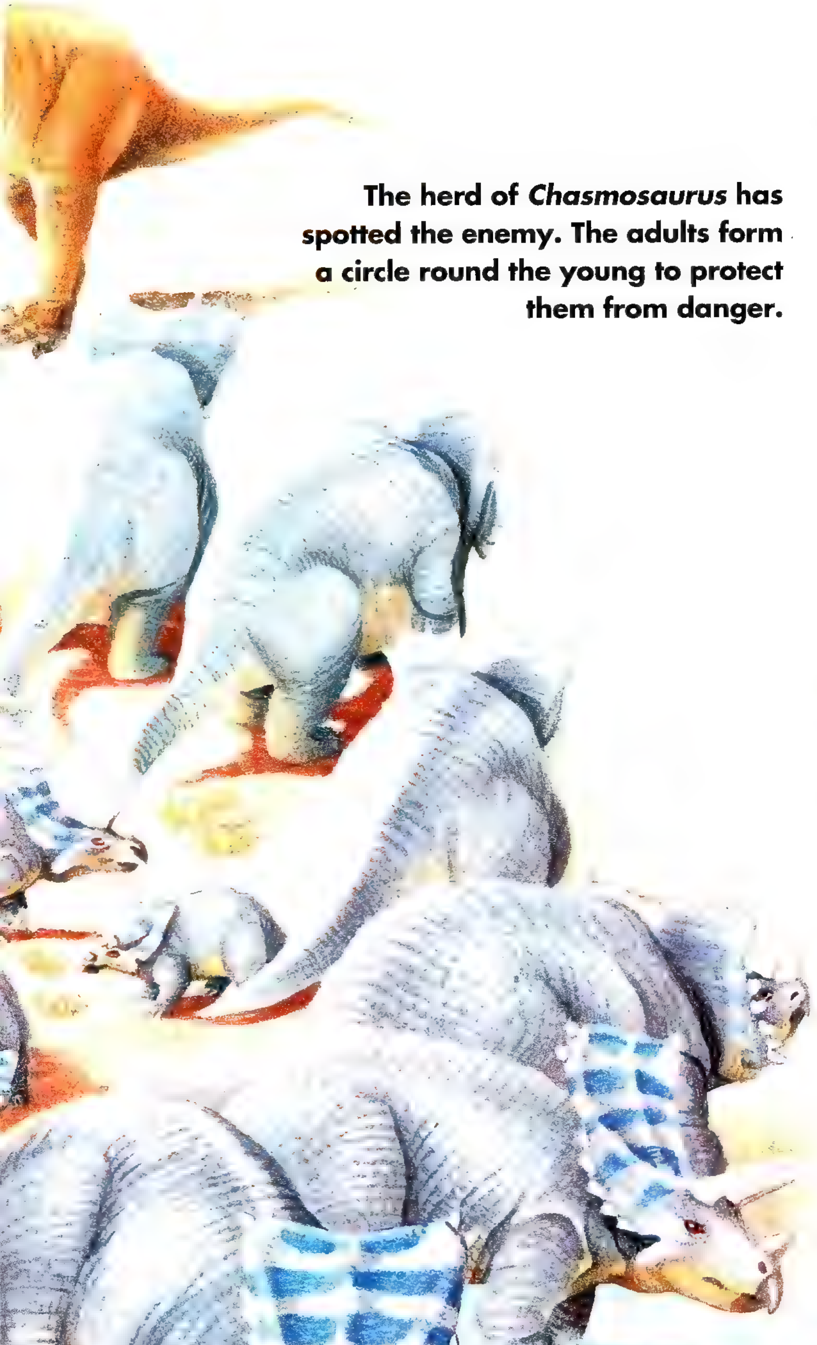
Animal look-outs use their noses as well as their eyes to sense danger. If the wind is in the right direction, they can pick up the smell of a predator hiding nearby, then they warn the rest of the herd.



***Albertosaurus* closes in for the kill. It will try to pick off a weak member of the herd.**

KEEPING THEIR EYES PEELED

Dinosaurs probably kept their eyes peeled at all times. Experts believe some dinosaurs were camouflaged to keep hidden while they stalked prey. So a keen sense of smell and excellent eyesight were needed to discover a hidden enemy dinosaur – before it was too late.



The herd of *Chasmosaurus* has spotted the enemy. The adults form a circle round the young to protect them from danger.

IT'S A FACT

SPEED KILLS

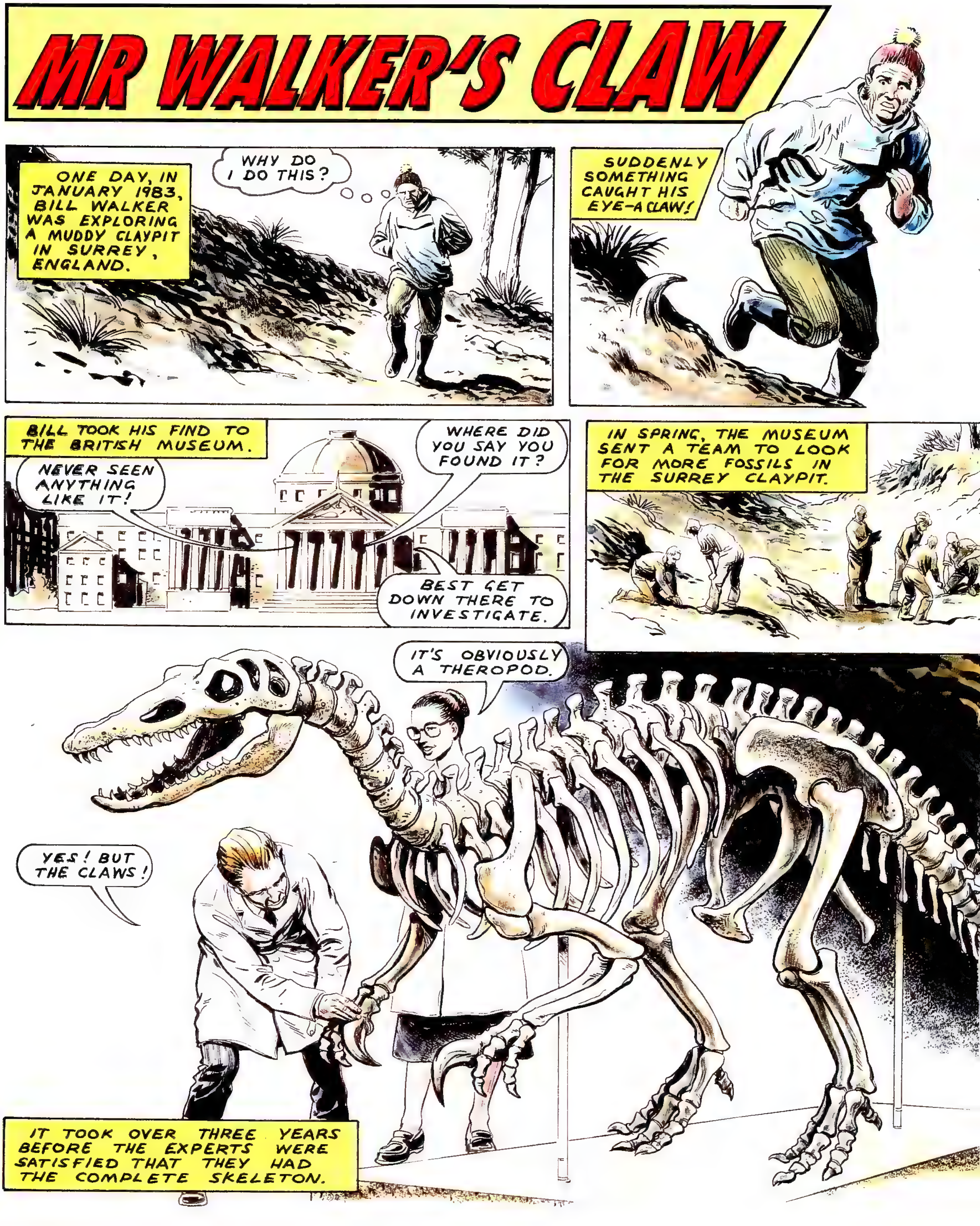
Large meat-eating dinosaurs could sprint at speeds of up to 40 km/h for short periods. Big plant-eating sauropods could only reach about 8 km/h. So they had no chance of outrunning their enemies.

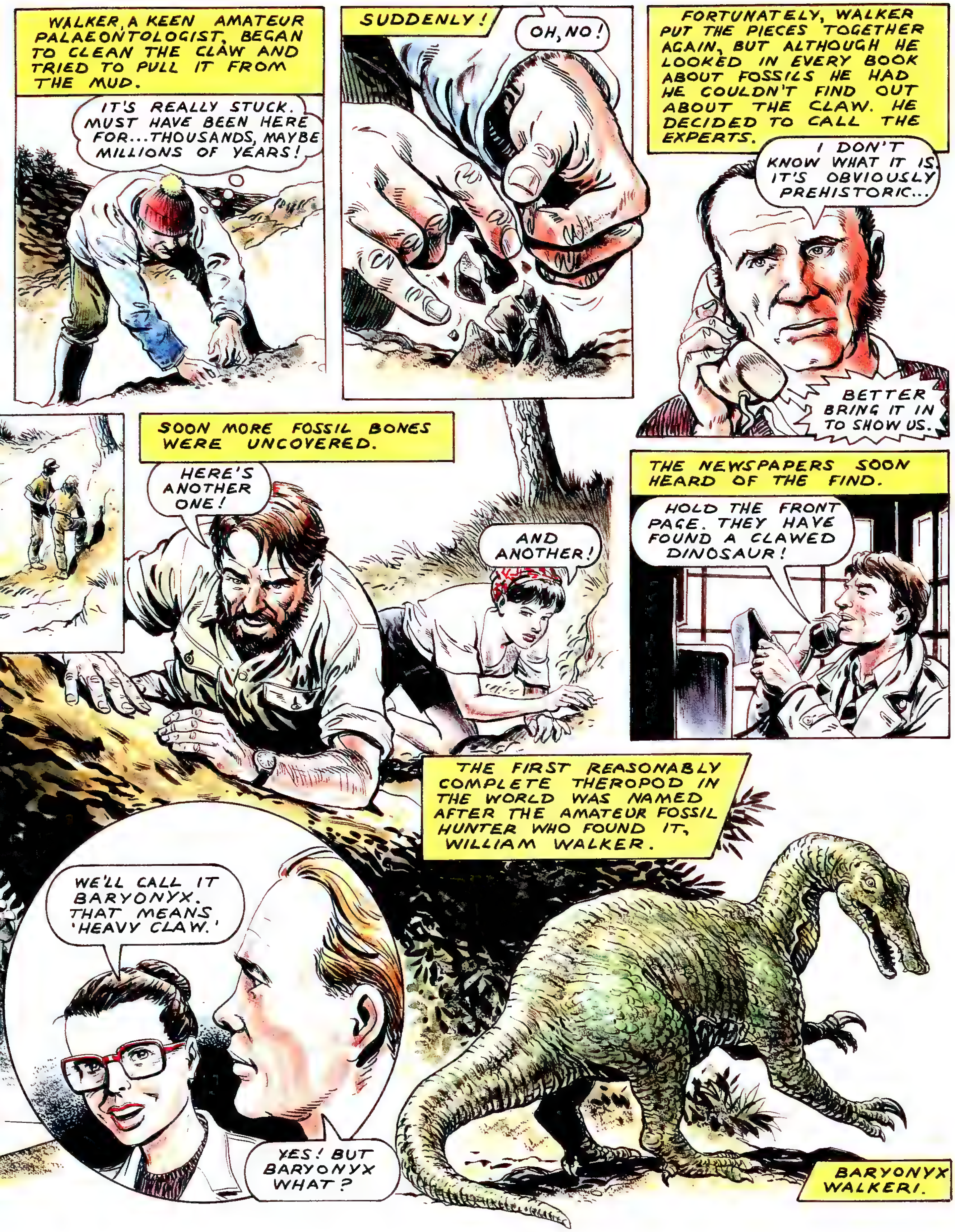
SHOW OF STRENGTH

When danger threatens, big modern plant-eaters, such as African elephants and musk oxen, form a protective wall around their young. A herd of *Chasmosaurus* might have stood its ground in a similar way, forming a circle around weaker herd members. Facing outward with their heads down and their shield-like neck frills and bristling horns up, they must have been a very frightening sight.

Musk oxen (left) encircle their young if they are attacked by wolves. Pioneers of the Wild West (above) made a ring of wagons to protect themselves from attack by Indians.

MR WALKER'S CLAW


ONE DAY, IN JANUARY 1983, BILL WALKER WAS EXPLORING A MUDDY CLAYPIT IN SURREY, ENGLAND.
WHY DO I DO THIS?
SUDDENLY SOMETHING CAUGHT HIS EYE–A CLAW!
BILL TOOK HIS FIND TO THE BRITISH MUSEUM.
NEVER SEEN ANYTHING LIKE IT!
WHERE DID YOU SAY YOU FOUND IT?
BEST GET DOWN THERE TO INVESTIGATE.
IN SPRING, THE MUSEUM SENT A TEAM TO LOOK FOR MORE FOSSILS IN THE SURREY CLAYPIT.
IT'S OBVIOUSLY A THEROPOD.
YES! BUT THE CLAWS!
IT TOOK OVER THREE YEARS BEFORE THE EXPERTS WERE SATISFIED THAT THEY HAD THE COMPLETE SKELETON.


WALKER, A KEEN AMATEUR PALAEONTOLOGIST, BEGAN TO CLEAN THE CLAW AND TRIED TO PULL IT FROM THE MUD.
IT'S REALLY STUCK. MUST HAVE BEEN HERE FOR...THOUSANDS, MAYBE MILLIONS OF YEARS!
SUDDENLY!
OH, NO!
FORTUNATELY, WALKER PUT THE PIECES TOGETHER AGAIN, BUT ALTHOUGH HE LOOKED IN EVERY BOOK ABOUT FOSSILS HE HAD HE COULDN'T FIND OUT ABOUT THE CLAW. HE DECIDED TO CALL THE EXPERTS.
I DON'T KNOW WHAT IT IS. IT'S OBVIOUSLY PREHISTORIC...
BETTER BRING IT IN TO SHOW US.
SOON MORE FOSSIL BONES WERE UNCOVERED.
HERE'S ANOTHER ONE!
AND ANOTHER!
THE NEWSPAPERS SOON HEARD OF THE FIND.
HOLD THE FRONT PAGE. THEY HAVE FOUND A CLAWED DINOSAUR!
THE FIRST REASONABLY COMPLETE THEROPOD IN THE WORLD WAS NAMED AFTER THE AMATEUR FOSSIL HUNTER WHO FOUND IT, WILLIAM WALKER.
WE'LL CALL IT BARYONYX. THAT MEANS 'HEAVY CLAW.'
YES! BUT BARYONYX WHAT?
BARYONYX WALKERI.

Improve and test your knowledge with...

DINO Fact File

Dinosaur nursery

Of the 100 or so footprints discovered along a beach in South Korea, most of them were made by baby dinosaurs in their first year of life. Scientists believe that the babies stayed together like children in a kindergarten.

Fascinating dinosaur facts to read and 10 fun questions to answer.

1 What did young *Corythosaurus* have on its head instead of a crest?
a) a small bump
b) horns
c) thumb spikes

2 Which sauropod got its name from a modern long-necked animal?
a) *Emusaurus*
b) *Giraffatitan*
c) *Flamingosaurus*

3 *Chasmosaurus* formed a protective wall around its young. Just like modern:
a) musk oxen
b) birds
c) lizards

4 How many fingers did *Ornitholestes* have?
a) three
b) four
c) five

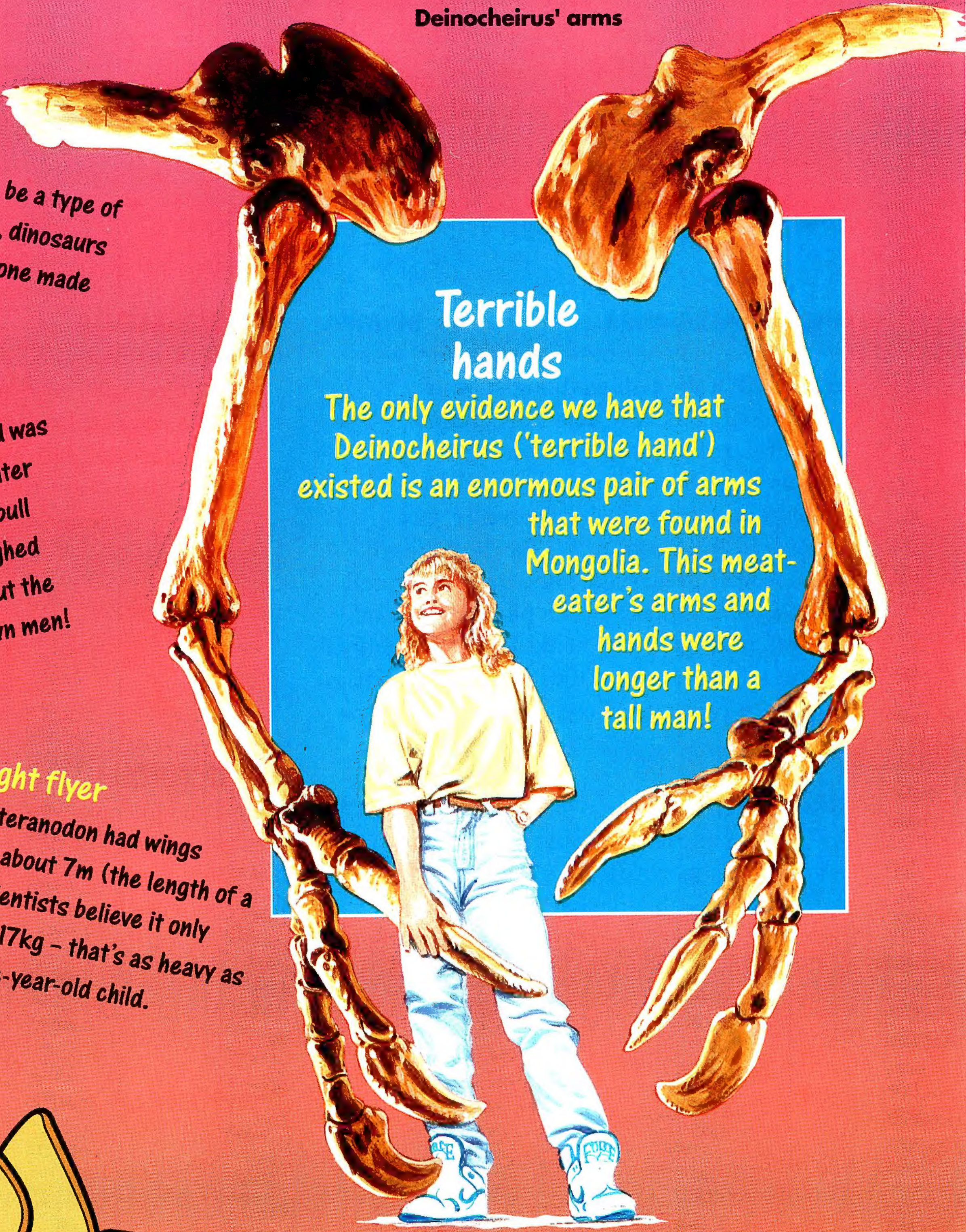
5 What was *Styracosaurus'* most useful weapon?
a) its big feet
b) its nose horn
c) its beak

6 What did *Corythosaurus* do to escape danger?
a) run off at top speed
b) take to the water
c) hide behind bushes

7 *Torosaurus'* skull weighed as much as:
a) 25 men
b) 25 chickens
c) a container lorry

8 Which prehistoric fish looked like a modern herring?
a) *Macropoma*
b) *Hybodus*
c) *Leptolepis*

9 What was *Montlivaltia?*
a) a fish
b) a coral
c) a mosasaur



Deinocheirus' arms

Pet dinosaur

The cartoon character Fred Flintstone's pet dinosaur Dino is meant to be a type of sauropod. But, of course, dinosaurs never met humans, let alone made good pets!

Record skull

The largest skull ever found was that of the huge plant-eater Torosaurus (meaning 'bull lizard'). The skull weighed 2,023kg – that is about the weight of 25 fully grown men!

Light flyer

Although Pteranodon had wings that spanned about 7m (the length of a lorry), scientists believe it only weighed about 17kg – that's as heavy as a three-year-old child.

Terrible hands

The only evidence we have that Deinocheirus ('terrible hand') existed is an enormous pair of arms that were found in Mongolia. This meat-eater's arms and hands were longer than a tall man!

10 How long was *Gorgosaurus*?

a) as long as a bus
b) as long as a train
c) as long as an ostrich

Not a dinosaur!

Many people think that pterosaurs, the great flying reptiles, were dinosaurs. They were not, dinosaurs could not fly. Pterosaurs were totally different creatures.

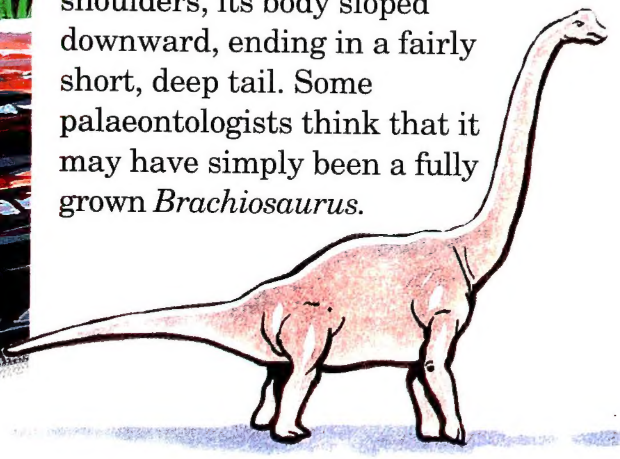
Answers to the questions on inside back cover

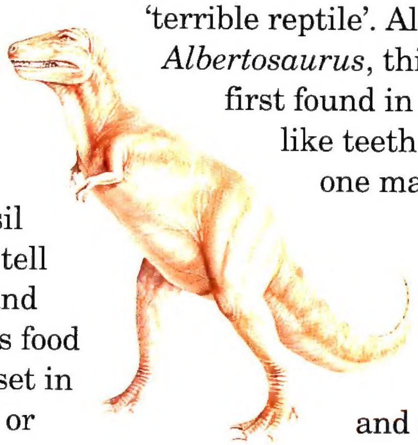
GILMOREOSAURUS 80 MYA

Gilmoreosaurus (gil-more-oh-saw-rus) was named after the palaeontologist who first described it. The scientist's name was Gilmore and so the dinosaur became known as 'Gilmore's reptile'. Unfortunately, when this dinosaur was discovered in China in the 1930s, its fossil was not well-preserved. But experts can tell that *Gilmoreosaurus* was a plant-eater and that it had a duck-like beak. It ground its food to a mushy pulp with hundreds of teeth set in rows. *Gilmoreosaurus* could walk on two or four legs.

GIRAFFATITAN 150 MYA

One of the tallest of all dinosaurs, *Giraffatitan* (jeer-raff-ah-tite-an) stood as high as four double-decker buses! Longer than the carriage of an express train and as heavy as nine elephants, *Giraffatitan* lived in Tanzania during the Late Jurassic Period. It fed on shoots from the top of the tallest trees. Unlike its namesake, the giraffe, *Giraffatitan* had thick, chunky legs. From the shoulders, its body sloped downward, ending in a fairly short, deep tail. Some palaeontologists think that it may have simply been a fully grown *Brachiosaurus*.





GORGOSAURUS 75 MYA

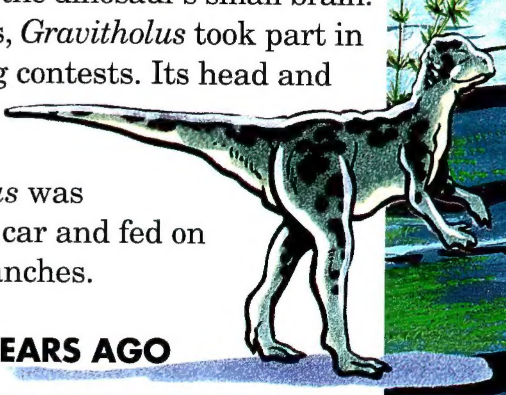
Gorgosaurus (gore-goh-saw-rus) means 'terrible reptile'. Also known as *Albertosaurus*, this huge carnivore was first found in Canada. It had dagger-like teeth to help it kill prey with one massive bite of its jaws. *Gorgosaurus* was as long as a bus and almost as tall as an elephant. It had a heavy body, tiny arms and only two fingers.

GOYOCEPHALE 75 MYA

Bone-headed *Goyocephale* (goy-oh-sef-a-lee) ('decorated head') was about the size of a big dog. Only part of its skull and some pieces of skeleton were discovered in Mongolia. *Goyocephale* had two pairs of small, sharp, front teeth and a low, domed head. In trials of strength, *Goyocephale* pushed against the thick skulls of its rivals with its knobbly head.

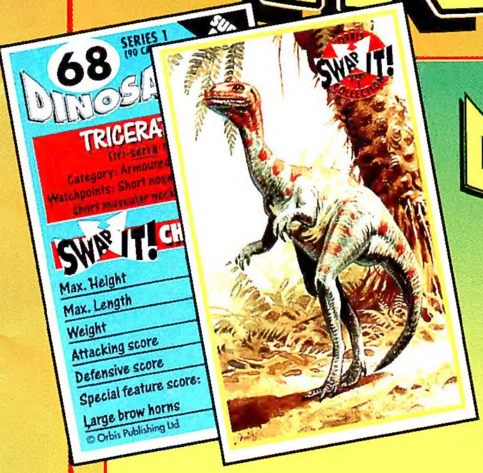
GRAVITHOLUS 75 MYA

Gravitholus (grav-i-thoh-lus) means 'heavy dome'. The dome on its skull was made of solid bone to protect the dinosaur's small brain. Standing on two legs, *Gravitholus* took part in violent head-butting contests. Its head and neck took the full shock of the collision. *Gravitholus* was longer than a small car and fed on tasty leaves and branches.



MYA = MILLION YEARS AGO

COMING IN PART 20 OF



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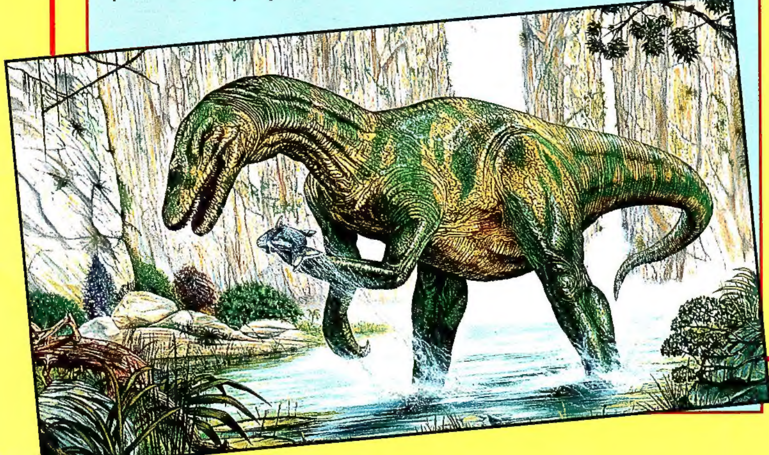

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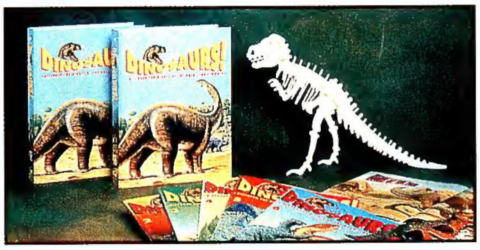

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ANSWERS TO DINO FACT FILE QUESTIONS: 1.a 2.b 3.a 4.a 5.b 6.b 7.a 8.c 9.b 10.a

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Dr. David Norman of Cambridge University answers your dinosaur questions

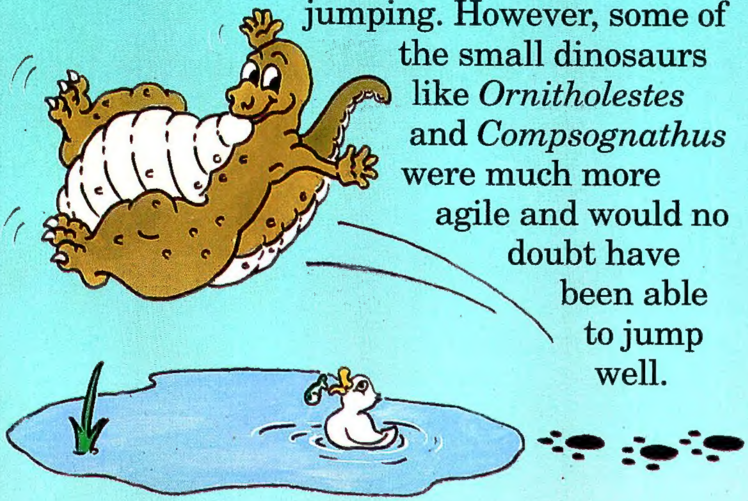
ASK THE EXPERT

What sort of habitats did dinosaurs live in?

To answer this question about dinosaurs and habitats is quite difficult. But put simply, it is true that dinosaurs had habitats in which they preferred to live. However, these were not all the same. Some, such as *Triceratops*, seem to have preferred mixed woodland areas, while others, such as huge herds of hadrosaurs, seem to have lived in open areas such as plains. Other dinosaurs were happiest in fairly dense forested areas, while the pachycephalosaurs usually made their homes in upland areas, rather like mountain goats do today.

Could dinosaurs jump or make a reasonable leap?

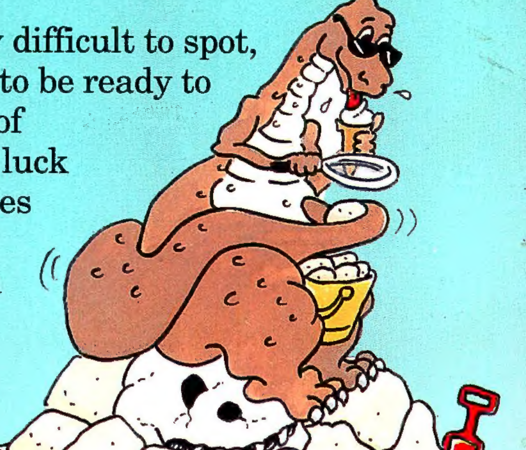
Large dinosaurs were not designed for jumping. However, some of the small dinosaurs like *Ornitholestes* and *Compsognathus* were much more agile and would no doubt have been able to jump well.



What dinosaur lived the longest time?

We do not yet have enough clues to tell how long dinosaurs lived, so we cannot discover which might have lived longest of all. I don't think that many dinosaurs would have lived longer than about 100 years. Most would have died at a much younger age, either through disease or by being attacked by their enemies which killed them for food.

How would you recognise a fossil on the beach?



Fossils are very difficult to spot, your eyes have to be ready to see them. Lots of experience and luck helps. Sometimes experts walk right past them thinking that they are just pebbles. I have just been given such a 'pebble' which turned out to be the skull of an armoured dinosaur – a find of some importance.

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